Land and Water Care through Participatory Watershed Management in India: An Overview

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Abstract: Watershed Management (WSM) has emerged as a new paradigm for planning, development and management of land, water and biomass resources with a focus on social and institutional aspects apart from bio-physical aspects following a participatory "bottom-up" approach. Watershed programmes are being implemented under an array of national schemes/programmes. The paper presents an overview of the WSM in relation to land and water care, its growth, approach to people's involvement at different stages of WSM programmes, planning and community organization, monitoring and impact evaluation and sustainability issues in WSM programmes. The paper also presents some policy issues and future challenges as regards to watershed management.
Keywords: watershed management, people's participation, soil & water conservation, capacity building, sustainable development

1 Introduction

The declining per capita land and fresh water availability coupled with soil erosion and land degradation in India are posing serious threat to environmental, food, social and economic security. About 50% of the country's geographical area is afflicted with different forms of soil erosion and land degradation. This is not only causing loss of productivity, floods and droughts, but also environmental degradation and average annual loss of storage capacities of the reservoirs by 1%—2%. This is posing the challenge of maintaining the soil health while obtaining more and more from less and less area and quality of land. Land degradation equally affects the quantity and quality of water availability as it influences hydrologic cycle. For sustainable development, land and water should, therefore, go together as land and water care constitutes the very foundation for building evergreen revolution in the country. It has also been amply demonstrated in India and elsewhere that it is impossible to envisage or implement sustainable solutions for land and water resource development and management without active and full participation of civil society. Development of land and water together with sustainable production system when confined to small natural drainage unit such as watershed leads to sustainable development.

2 Growth and models of watershed management

Watershed Management (WSM) has emerged as a new paradigm for planning, development and management of land, water and biomass resources with a focus on social and institutional aspects apart from bio-physical aspects following a participatory "bottom-up" approach. Watershed programmes are being implemented under an array of national schemes/programmes. Some of the important ongoing WSM programmes include Integrated Wasteland Development Programme (IWDP); Drought Prone Area Programme (DPAP); Desert Development Programme (DDP); Employment Assurance Scheme (EAS); River Valley Project (RVP) and Flood Prone River (FPR); National Watershed Development Programme for Rainfed Agriculture (NWDPRA); Western Ghats Development Programme (WGDP); Hill Area Development Programme (HADP); International Programmes of DANIDA, GTZ; KfW, DFID (UK), SIDA, Japan, etc; National Bank for Agriculture & Rural Development (NABARD) Watershed Programmes; State funded WSM programmes and various foreign funded Afforestation Projects.

The Government of India has accorded the highest priority to the holistic and sustainable development of rainfed areas, wastelands, drought prone areas, hilly areas and degraded areas through integrated watershed management approach. The current strategy of various ongoing national, bilateral and internationally aided projects of WSM is based on the concept of conservation of rainwater, groundwater recharge, promotion of diversified and integrated farming systems approach, management of common property resources and augmenting family income. Most of the WSM programmes envisage sustainable institutional arrangements at watershed level in the form of local level people institution as an integral component of these projects for promoting participation of civil societies and ensuring sustainability. Though the WSM programmes are being administered by various Ministries such as Agriculture, Rural Development, Environment & Forest and Water Resources, but they all converge to overall objective of sustainable management of land, water and vegetation resources with multiple benefits. Like the large number of WSM programmes, different Government agencies and NGOs are involved in the implementation of these programmes.

3 Participatory planning & implementation

People's involvement is envisaged right from pre-planning stage to implementation and management stage.

Community Organization: Participatory approach is more pertinent in the planning and development of watershed management (WSM) programmes, because it is basically the people's programme and the government agency should participate in that as a facilitator. The concept of participatory process is easy to advocate but difficult in practice. This needs active involvement and dedication. This also demands some psycological and functional adjustments by the government functionaries. Involvement of social organizations, NGOs and VOs is a must to organize and mobilize community support and make this as people's programme and national movement.

This whole process involves followings.

Meetings with the Watershed Community: To explain the purpose of the programmes, get their feed backs, develop contacts, gather Indigenous Technological Knowledge (ITK) and win their confidence.

Problems Appraisal and Plan Formulation: By onducting Participatory Rural Appraisal (PRA) or Rapid Rural Appraisal (RRA) exercises in the village to gather information, diagnose their problems, needs and priorities to arrive at a common outline of watershed development plan.

External Organisation—as a Facilitator: To provide technical support in programme implementation and community organization.

Formation of local level People Institution: For day to day running, management and distribution of benefits and create working capital through revenue generation, people contribution, etc., for repair and maintenance of the works. This will create a self sustaining local level institution to take over the activities after withdrawal of Project.

The process of community organization and plan preparation may proceed simultaneously. A typical WSM plan includes a) protection and conservation measures, b) production system measures for arable & non-arable lands, and c) livelihood support system for landless families. However, in practise, this aspect has received less attention and needs to be strengthened.

Convergence Approach: Watershed management is being considered a single window, integrated area development programme. Integrated watershed management cannot perhaps be achieved just by following integration of resources using multidisciplinary approach with the funding or support provided alone under any watershed programme line IWDP/DPAP etc. This may also involve harmonized use of resources available from other on going/existing sectoral and development schemes in the area/district.

4 Participatory monitoring & impact assessment

Impact Indicators/Indices

There are no single definitive indicators or measures and indices for overall impact measurement/assessment in view of complexities and diverse/multiple objectives of such watershed

development projects. In view of this, a set of quantitative and qualitative simple surrogate measures, indicators and indices may be evolved and/or used to assess changes as a result of watershed impact. Biophysical/technical, socio-cultural, economic, community participation, institutional and sustainability indicators are developed based on their applicability to objectives of the project (Sikka *et al*., 2000; Sikka *et al*., 2001).

Since most of the time bench mark data is not available or inadequate, participatory impact evaluation may be adopted. The evaluation team may largely use PRA techniques for information/data collection during field visits. Sample surveys, field observations, discussion with community members and community organizers and line department staff are used for data/information collection.

Some of the methods that can be used are as follows:

- Transect
- Direct Observation
- Semi-structured interview technique
- Resource mapping
- Scoring, ranking and matrices
- Focus group discussion
- Self assessment through scoring technique
- Sustainability analysis
- Garrett ranking
- SWOT analysis
- Perusal of Records/Registers/Account books maintained by farmers

5 Sustainability

Programme is sustainable that continues to operate after withdrawal of monetary and/or technical supports of the project. In WSM, an in-situ development programme, the participation of local community is **"sin qua non"**, since the different works/activities implemented on private and common lands have to be sustained by the owner of the land in addition to maintaining collectively the works on common lands.

This emphasizes the significance of "participation" for sustainability in WSM programmes.

What is required for sustainability?

- People's participation right from pre-planning stage.
- Community empowerment including integration of women in project activities.
- Local level People's Institution.
- Capacity building of the Institution and its actors.
- Resource generation or capital for sustenance.
- Belief of deriving tangible benefits from development of PPRs & CPRs.
- Linkages with credit and input institutions and technical/scientific support organizations.
- Suitable withdrawal strategy.
    - All these would mean integration of Social Resource Management with Natural Resource Management for achieving sustainable results giving emphasis to protection/conservation, production measures and social & livelihood support activities.
    - Role of Project & Institutional partners
    - As a provider of selected services & inputs e.g., capacity building, Technical assistance, micro-credit, materials, etc.
    - As a facilitator and coordinator.

6 Conclusions and future challenges

The encouraging results and the experience of various integrated watershed management programmes in the country strongly suggest their importance and technical, economical, social and environmental viability for sustainable development through people's participation, following a "bottom up" approach with a blend of "top down" input.

Future Challenges

- Technology for in-situ moisture conservation, micro level network of water harvesting systems, combined management of perennial and annual plant cover management through agro-forestry models should be extensively demonstrated and adopted.
- Water resource management rather than development is the major challenge. It therefore calls for a greater attention towards both supply and demand management of water resources through renovation and rejuvenation of existing/abandoned structures/systems, conservation education and training, institutional financing for improved water management methods/practices including micro-irrigation, promotion of viable, cost effective local rainwater harvesting, rainwater conservation and other groundwater augmentation measures.
- Biophysical aspects of watershed research are relatively better attempted and understood than socio-economic, community participation, capacity building, conflict resolution, gender issues, etc.
- Scientific data about the on-site effects is relatively richer as compared to off-site effects of flooding, ground water recharge, environmental externalities and hydro-ecological aspects.
- Comparative performance of grasses and woody species including value added aromatic and medicinal plants/grasses for conservation under varied watershed and socio-economic conditions needs more attention.
- Some other important researchable issues for future may include stress on sub-surface hydrology of watersheds, hydro-ecology, impact of WSM on ground water recharge, use of modern tools like GIS and remote sensing, Decision Support System, social aspects of watershed management and environmental/resource economics.
- Monitoring and evaluation should be made a compulsory component right from beginning and suitable biophysical, socio-economic, participatory and environmental indicators be used for impact assessment.
- Formation of local watershed level people institutions to carry out various works and activities and constitution of watershed committees be made essential to develop local institutions.
- Looking at the size and dimensions of different watershed programmes in the country, an increased emphasis should be given to train manpower in watershed management through short term training programmes including sensitization of higher level officers.
- Social mobilization, more decentralisation and community empowerment needed to be explicitly included in government policies for success of community based watershed programmes.
- It is suggested that basinwise planning and management of water resources should integrate participatory watershed management programmes for sustainable development, and small and micro water harvesting systems made integral part of the water resource planning, development and management at the national/regional levels.
- There is now a challenge to ensure the sustainability of WSM programmes for which appropriate withdrawal and post-project strategies and mechanisms have to be evolved and demonstrated.

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